



ETL Inc.

#371-51, Gasan-dong, Geumcheon-gu, Seoul, 153-803, Korea

FCC VERIFICATION CERTIFICATE

Report Issue Date	August 21, 2009
Test Report No.	ETLE080219.158.1
Test Site	FCC Registration Number: 95422
Applicant	NEW BORN HIGHTECH
Contact Person	Wang, Young-sin / R&D Assistant manager
	Tel: +82-2-862-7914 Fax: +82-2-862-7920
Manufacturer	NEW BORN HIGHTECH
Product Type	INTELLIGENT DOME CAMERA
Model	NSD-S360
Multiple Model	NSD-S300, NSD-S230, NSD-S680, NSD-H350, NSD-S330, NSD-S370, NSD-S230IP, NSD-S300IP, NSD-S330IP, NSD-S360IP, NSD-S370IP, NSD-S680IP
FCC Rule Part(s)	Part 15 Subpart B
Classification	All Other devices
Limit Apply	FCC Part 15.107 & 15.109 Class A

The device bearing the trade name and model specified above has been shown to comply with the applicable technical standard as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003.

I attest to the accuracy of data and all measurement reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualification of all persons taking them.

Yo Han, Park
Chief Engineer

Electromagnetic Emission

FCC MEASUREMENT REPORT

VERIFICATION OF COMPLIANCE

FCC Part 15 Verification Measurement

PRODUCT : INTELLIGENT DOME CAMERA
MODEL/TYPE NO : NSD-S360 / NONE
Multiple Model Name : NSD-S300, NSD-S230, NSD-S680, NSD-H350, NSD-S330,
NSD-S370, NSD-S230IP, NSD-S300IP, NSD-S330IP,
NSD-S360IP, NSD-S370IP, NSD-S680IP
APPLICANT : NEW BORN HIGHTECH
Byucksan/Kyungin Digital Valley 2 1218~1220, 481-10 Gasan-dong,
Geumcheon-gu, Seoul, Korea
Attn.: Wang, Young-sin / R&D Assistant manager
MANUFACTURER : NEW BORN HIGHTECH
Byucksan/Kyungin Digital Valley 2 1218~1220, 481-10 Gasan-dong,
Geumcheon-gu, Seoul, Korea
FCC CLASSIFICATION : All Other devices
FCC RULE PART(S) : FCC Part 15 Subpart B
FCC PROCEDURE : ANSI C63.4-2003
TEST REPORT No. : ETLE080219.158.1
DATES OF TEST : February 20, 2008 to March 04, 2008
REPORT ISSUE DATE : August 21, 2009
TEST LABORATORY : ETL Inc. (FCC Registration Number : 95422)

This INTELLIGENT DOME CAMERA, Model NSD-S360 has been tested in accordance with the measurement procedures specified in ANSI C63.4-2003 at the ETL Test Laboratory and has been shown to be complied with the electromagnetic radiated emission limits specified in FCC Rule Part15 Subpart B:

I attest to the accuracy of data. All measurement herein was performed by me or was made under my supervision and is correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.



Yo Han, Park / Chief Engineer

ETL Inc.

#371-51, Gasan-dong, Geumcheon-gu, Seoul, 153-803, Korea

Tel: 82-2-858-0786 Fax: 82-2-858-0788

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FCC MEASUREMENT REPORT

Scope – Measurement and determination of electromagnetic emission(EME) of radio frequency devices including intentional radiators and/or unintentional radiators for compliance with the technical rules and regulations of the U.S Federal Communications Commission(FCC)

General Information

Applicant Name	: NEW BORN HIGHTECH
Address	: Byucksan/Kyungin Digital Valley 2 1218~1220, 481-10 Gasan-dong, Geumcheon-gu, Seoul, Korea
Attention	: Wang, Young-sin / R&D Assistant manager

- **EUT Type :** INTELLIGENT DOME CAMERA
- **Model Number :** NSD-S360
- **S/N :** NONE
- **Frequency Range :** X-TAL → 18,432 MHz; 17,734475 MHz; 14,31818 MHz
- **FCC Rule Part(s) :** FCC Part 15 Subpart B
- **Test Procedure :** ANSI C63.4-2003
- **FCC Classification :** All Other devices
- **Dates of Tests :** February 20, 2008 to March 04, 2008
- **Place of Tests :** ETL Inc. Testing Lab. (FCC Registration Number : 95422)

Radiated Emission test;
584, Sangwhal-Ri, Ganam-myeon, Yaju-gun,
Gyeonggi-do, Korea

Conducted Emission test;
371-51, Gasan-dong, Geumcheon-gu, Seoul, 153-803, Korea
- **Test Report No. :** ETLE080219.158.1

1. INTRODUCTION

The measurement test for radiated and conducted emission test were conducted at the ETL Inc. The site is constructed in conformance with the requirements of the ANSI C63.4-2003 and CISPR Publication 16. The ETL has site descriptions on file with the FCC for 3 m and 10 m site configurations. Detailed description of test facility was found to be in compliance with the requirements of Section 2.948 FCC Rules according to the ANSI C63.4-2003 and registered to the Federal Communications Commission (Registration Number : 95422).

The measurement procedure described in American National Standard for Method of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ANSI C63.4-2003) was used in determining radiated and conducted emissions from the NEW BORN HIGHECH Model: NSD-S360.

2. PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the NEW BORN HIGHTECH (model: NSD-S360)

The model NSD-S360 is basic model that was tested.

Model	Fitted variety zoom module	Effective Pixels No.
NSD-S360 (Basic model)	x36	410k
NSD-S300	x30	410k
NSD-S230	x23	410k
NSD-S680	x26	680k
NSD-H350	x35	410k
NSD-S330	x33	410k
NSD-S370	x37	410k
NSD-S230IP	x23	410k
NSD-S300IP	x30	410k
NSD-S330IP	x33	410k
NSD-S360IP	x36	410k
NSD-S370IP	x37	410k
NSD-S680IP	x26	680k

2.2 General Specification

- Optical zoom: 36× Zoom
- Digital zoom: Maximum 432× Zoom
- Focal length: F= 3,4 mm ~ 122,4 mm
- Expression of X, Y coordinates
- Cam memory easy to Back up & Up-Grade Firmware by DATA
- Auto compensation Pan/Tile position
- Preset and Function title setting possible (OSD function)
- Max Pan speed 400°/sec with Turbo key pressed
- Support variety surveillance mode (Pattern, Vector Scan, Tour, Group)
- Support Multiple Protocol
- Fitted variety zoom module (22×, 23×, 26×, 30×, 35×, 36×)
- Auto Tracking function (Option)

CAMERA	Effective Pixels No	Approx 410k
	Signal System	DSP / NTSC / PAL
	Pick-up Device	1/4" Ex-view HAD CCD
	Horizontal Resolution	540TV Lines
	S/N Ratio	More Than 50dB
	Min Illuminance	1,4lux, 0,01lux (ICR ON)
	Lens	F = 3,4 mm ~ 122,4 mm
	Optical Zoom	Tele - Wide ×36
	Digital Zoom	Up – Down ×12(432×)
PAN/TILT	Preset	512 Position
	Preset Speed	Pan 360°, Tilt 180°/Sec
	Max Pan Speed	Pan 400°/Sec with Turbo key pressed
	Max Tilt Speed	Tilt 180°/Sec
	Panning Range	1° ~ 360° / Endless
	Tilting Range	0° ~ 180°
	Control Method	RS-422/485
	Digital Flip	On/Off
	Cam ID Control	999 Connect
Function	Zone Function	Yes (One Button Push)
	Cam ID Change By Data	Yes (With NK-2003TX)
	Cam Power On/Off By Data	Yes (With NK-2003TX)
	Memory Back Up by Data	Yes
	Camera Up-Grade by easy Data	Yes
	Expression of X,Y coordinates	Yes
	Self Check Up Function	Yes
	Set Memory Pop-Up Function	Yes
	Zoom/Pan/Tilt Speed Coordination	Yes
	Home Position	Yes
	Alarm Input	5 Input 1 relay Output
	SCAN	8 Programmable
	GROUP	6 Group
	TOUR	8 Tour
	PATTERN	6 Pattern (360sec)
	SWING	Yes
	VECTOR SCAN	Yes
Operating Temp		-10 °C ~ 60 °C
Power Supply		DC 24 V / AC 24 V
Power Type		SMPS
Weight		1,7 kg
Dimension		Ø150 X 173 (H)

3. DESCRIPTION OF TESTS

3.1 Conducted Emission Measurement

Conducted emissions measurements were made in accordance with section 11, "Measurement of Information Technology Equipment" of ANSI C63.4-2003. The measurements were performed over the frequency range of 0,15 MHz to 30 MHz using a 50 Ω / 50 uH LISN as the input transducer to a Spectrum Analyzer or a Test Receiver. The measurements were made with the detector set for "Peak" amplitude within a bandwidth of 9 kHz or for "quasi-peak" within a bandwidth of 9 kHz.

The line-conducted emission test is conducted inside a shielded anechoic chamber room with 1 m x 1,5 m x 0,8 m wooden table which is placed 0,4 m away from the vertical wall and 1,5 m away from the side wall of the chamber room. Two LISN are bonded to the shielded room. The EUT is powered from the LISN and the support equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1,2 cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and these supply lines will be connected to the LISN. Non-inductive bundling to a 1 m length shortened all interconnecting cables more than 1 m. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the EMI Test Receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using to set Quasi-Peak mode by manual, after scanned by automatic Peak mode from 0,15 MHz to 30 MHz. The bandwidth of the spectrum analyzer was set to 9 kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission.

Photographs of the worst-case emission can be seen in photographs of conducted emission test setup in Appendix B.

3.2 Radiated Emission Measurement

Radiated emission measurements were made in accordance with section 11, "Measurement of Information Technology Equipment" of ANSI C63.4-2003. The measurements were performed over the frequency range of 30 MHz to 1 GHz using antenna as the input transducer to a spectrum analyzer or a field intensity meter. The measurements were made with the detector set for "Quasi-peak" within a bandwidth of 120 kHz.

Preliminary measurements were made at 3 m using broadband antennas, and spectrum analyzer to determine the frequency producing the maximum emission in shielded room. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 MHz to 1 000 MHz using Log-Bicon antenna. Above 1 GHz, linearly polarized double ridge horn antennas were used. Final measurements were made open site at 10 m. The test equipment was placed on a wooden turn-table. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR Quasi-peak mode and the bandwidth of the receiver was set to 120 kHz or 1 MHz depending on the frequency of type of signal. The EUT, support equipment and interconnecting cables were re-configured to the set-up producing the maximum emission for the frequency and were placed on top of a 0,8 m high nonmetallic 1 m x 1,5 m table. The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 m to 4 m and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or support equipment and changing the polarity of the antenna, whichever determined the worst-case emission.

Photographs of the worst-case emission can be seen in Photographs of the worst-case emission test setup can be seen in Appendix B.

4. TEST CONDITION

4.1 Test Configuration

The device was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the following conditions and configurations were used.

4.2 EUT operation

Operating Mode	The worst operating condition
- Camera image display mode	X
- Camera image display mode and lens angle point auto mode	◎

◎ : Worst case investigated during the test.

4.3 Support Equipment Used

Following peripheral devices and interface cables were connected during the measurement:

Description	Model Name	Serial No.	Manufacturer
LCD TV Monitor	OR940S	NONE	ORION
Adapter (for LCD TV Monitor)	DA-48M12	Y321207211003819700	Asian Power Devices Inc.
DC power supply	E3616A	KR64301658	HP

4.4 Type of Cables Used

- Power Supply Type: DC 24 V

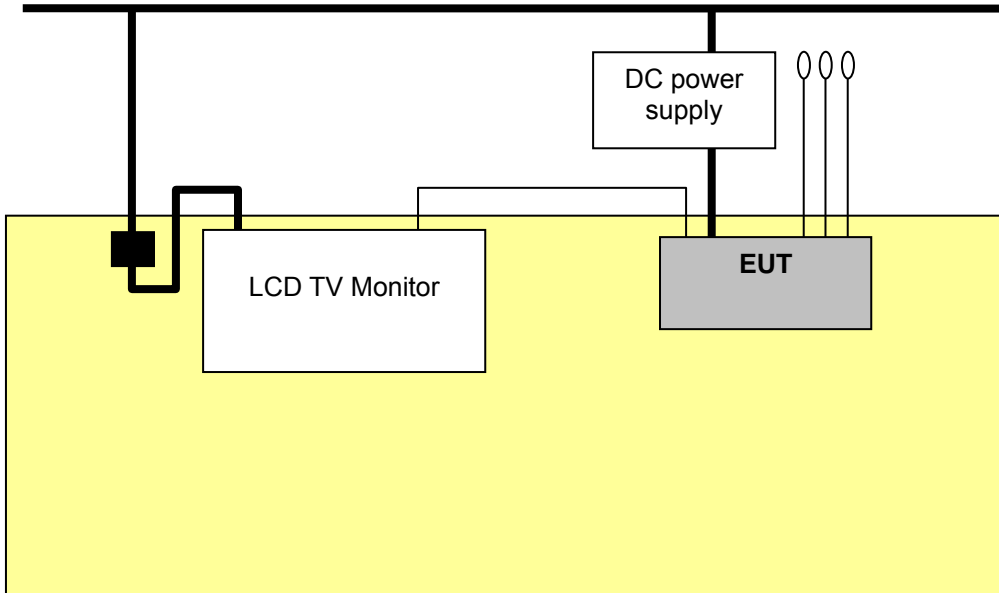
Device from	Device to	Type of Cable(Port)	Length(m)	Type of shield
EUT	LCD TV Monitor	Video Out	>3,0	Shielded
EUT	Termination	RS-485/422	>3,0	Unshielded
EUT	Termination	AUX	>3,0	Unshielded
EUT	Termination	SENSOR	>3,0	Unshielded
EUT	DC power supply	AC/DC Input	1,0	Unshielded
LCD TV Monitor	Adapter	DC Input	1,2	Shielded

- Power Supply Type: AC 24 V

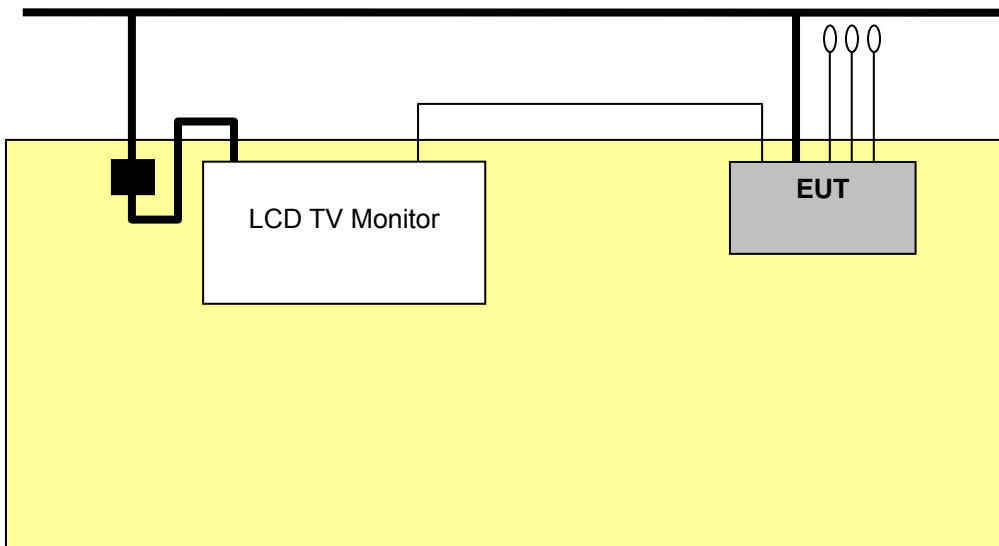
Device from	Device to	Type of Cable(Port)	Length(m)	Type of shield
EUT	LCD TV Monitor	VIDEO OUT	>3,0	Shielded
EUT	Termination	RS-485/422	>3,0	Unshielded
EUT	Termination	AUX	>3,0	Unshielded
EUT	Termination	SENSOR	>3,0	Unshielded
EUT	Power socket	AC/DC Input	1,0	Unshielded
LCD TV Monitor	Adapter	DC Input	1,2	Shielded

4.5 The setup drawing(s)

- Power Supply Type: DC 24 V



- Power Supply Type: AC 24 V



- _____ : Data Line
- : Power Line
- ——— : Termination
- : Adapter

5. TEST RESULTS

5.1 Summary of Test Results

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum emission of the EUT are reported.

FCC Rules	Measurement Required	Result
15.107	Conducted Emissions Measurement	Passed by 20,70 dB
15.109	Radiated Emissions Measurement	Passed by 8,80 dB

The data collected shows that the **NEW BORN HIGHTECH INTELLIGENT DOME CAMERA, NSD-S360** complies with technical requirements of above rules part 15.107 and 15.109 Class A.

The equipment is not modified anything, mechanical or circuits to improve EMI status during a measurement. No EMI suppression device(s) was added and/or modified during testing.

5.2 Conducted Emissions Measurement

EUT	INTELLIGENT DOME CAMERA / NSD-S360 (S/N: N/A)
Limit apply to	FCC Part 15.107 Class A
Power Supply Type	AC 24 V
Test Date	March 03, 2008
Operating Condition	Camera image display mode and lens angle point auto mode
Result	Passed by 20,70 dB

Conducted Emission Test Data


The following table shows the highest levels of conducted emissions on both polarizations of hot and neutral line.

Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 9 kHz)

Frequency [MHz]	Result [dB μ V]		Phase (*L/**N)	Limit [dB μ V]		Margin [dB]	
	Quasi-peak	Average		Quasi-peak	Average	Quasi-peak	Average
0,270	52,5	26,7	H	79,0	66,0	26,6	37,3
0,380	53,6	40,3	H	79,0	66,0	25,4	25,7
0,490	52,7	28,7	H	79,0	66,0	26,3	37,3
0,805	52,3	37,3	H	73,0	60,0	20,7	22,7
3,260	45,3	30,7	H	73,0	60,0	27,7	29,3
16,250	38,7	26,5	H	73,0	60,0	34,4	33,5

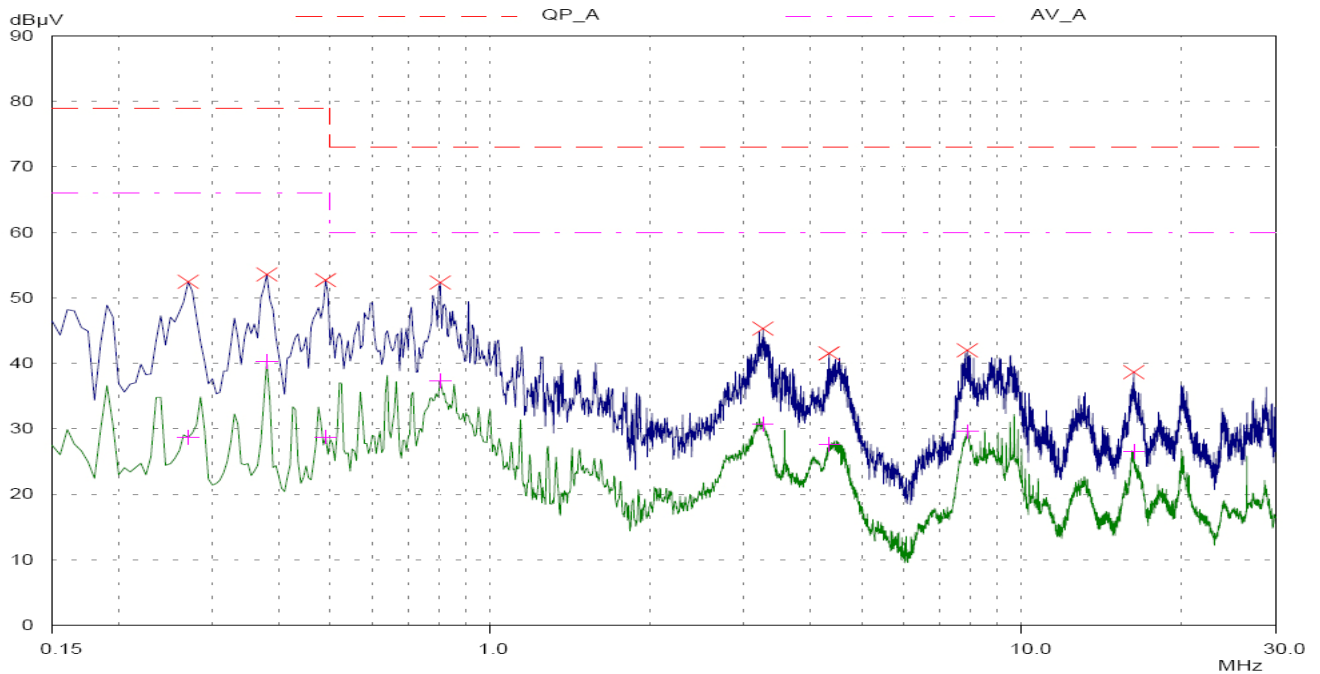
NOTES:

1. * H : HOT Line , **N : Neutral Line
2. Margin value = Limit – Result
3. Measurement were performed at the AC Power Inlet in the frequency band of 150 kHz ~ 30 MHz according to the FCC Part 15 Class A.

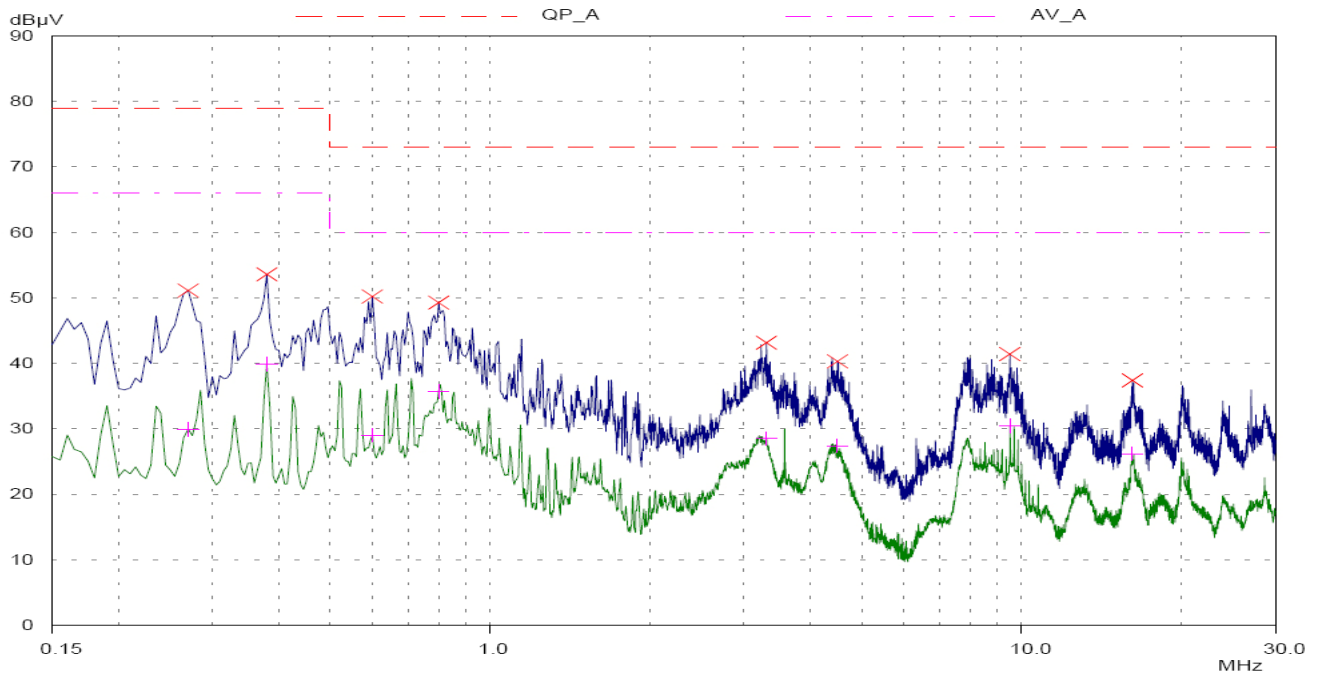

 Test Engineer : Hyung-min, Choi


Line: HOT Line

Limit: --- Quasi-Peak
 --- Average



Line: Neutral Line



Quasi-peak 
 Average 

5.3 Radiated Emissions Measurement

EUT	INTELLIGENT DOME CAMERA / NSD-S360 (S/N: N/A)
Limit apply to	FCC Part 15.109 Class A
Power Supply Type	DC 24 V
Test Date	March 03, 2008
Operating Condition	Camera image display mode and lens angle point auto mode
Result	Passed by 8,80 dB


Radiated Emission Test Data

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.
Detector mode: CISPR Quasi – Peak mode (6 dB Bandwidth: 120 kHz)

Frequency [MHz]	Reading [dBμV]	Polarization (*H/**V)	Ant. Factor [dB/m]	Cable Loss [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]
48,41	9,38	V	9,65	2,07	21,10	39,00	17,90
114,53	19,47	V	10,14	2,99	32,60	43,50	10,90
128,83	18,31	V	10,86	3,23	32,40	43,50	11,10
143,17	18,89	V	11,36	3,45	33,70	43,50	9,80
171,82	20,29	V	10,59	3,82	34,70	43,50	8,80
229,07	7,94	V	10,67	4,59	23,20	46,44	23,24

NOTES:

1. * H: Horizontal polarization, ** V: Vertical polarization
2. Result = Reading + Antenna factor + Cable loss
3. Margin value = Limit - Result
4. The measurement was performed for the frequency range 30 MHz ~ 1 000 MHz according to the FCC Part 15.109 Class A.


Test Engineer: **Hyung-min, Choi**

EUT	INTELLIGENT DOME CAMERA / NSD-S360 (S/N: N/A)
Limit apply to	FCC Part 15.109 Class A
Power Supply Type	AC 24 V
Test Date	February 29, 2008
Operating Condition	Camera image display mode and lens angle point auto mode
Result	Passed by 9,70 dB

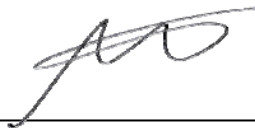
Radiated Emission Test Data

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.
Detector mode: CISPR Quasi – Peak mode (6 dB Bandwidth: 120 kHz)

Frequency [MHz]	Reading [dBμV]	Polarization (*H/**V)	Ant. Factor [dB/m]	Cable Loss [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]
114,53	20,67	V	10,14	2,99	33,80	43,50	9,70
128,84	18,41	V	10,86	3,23	32,50	43,50	11,00
143,17	18,79	V	11,36	3,45	33,60	43,50	9,90
157,48	7,79	V	11,35	3,66	22,80	43,50	20,70
171,81	18,09	V	10,59	3,82	32,50	43,50	11,00
200,43	15,05	V	9,84	4,01	28,90	43,50	14,60

NOTES:

1. * H: Horizontal polarization, ** V: Vertical polarization
2. Result = Reading + Antenna factor + Cable loss
3. Margin value = Limit - Result
4. The measurement was performed for the frequency range 30 MHz ~ 1 000 MHz according to the FCC Part 15.109 Class A.


Test Engineer: **Hyung-min, Choi**

6. SAMPLE CALCULATION

Sample Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor.
The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

$$dB(\mu V) = 20 \log_{10} (uV) : \text{Equation}$$

Example : @ 171,82 MHz

Class A Limit = 43,50 dBuV/m

Reading = 20,29 dBuV

Antenna Factor + Cable Loss = 10,59 + 3,82 = 14,41 dBuV/m

Total = 34,70 dBuV/m

Margin = 43,50 – 34,70 = 8,80 dB

= 8,80 dB below Limit

7. List of test equipments used for measurements

Test Equipment		Model	Mfg.	Serial No.	Cal. Due Date
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESVS 10	R & S	835165/001	08.05.03
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESHS 30	R & S	840190/002	09.02.25
<input checked="" type="checkbox"/>	LISN	3816-2	EMCO	1001	08.10.04
<input checked="" type="checkbox"/>	LISN	3816-2	EMCO	1002	08.10.04
<input checked="" type="checkbox"/>	LogBicon Antenna	VULB9165	Schwarzbeck	2023	08.09.03
<input checked="" type="checkbox"/>	Turn-Table	DETT-03	Daeil EMC	-	N/A
<input checked="" type="checkbox"/>	Antenna Master	DEAM-03	Daeil EMC	-	N/A

Appendix A. FCC Label and Location

Product Label Sample with FCC Label information

Following is a sample copy of the label that will be placed on the rear cabinet of the product.
The FCC Label and compliance statement are marked in the product label.
The warning statement and Information to the User are described in the user manual.

<p>NEW BORN HIGHTECH</p> <p>INTELLIGENT DOME CAMERA</p> <p>Model No. : NSD-S360 POWER : DC 24 V; AC 24 V Serial No. : NONE</p> <p>This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.</p> <p>Manufacturer: NEW BORN HIGHTECH Made in Korea</p>
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Label Location

The label shown shall be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time purchase. (Labeling requirements per 2.925)



Conducted Emission Test Setup



Radiated Emission Test Setup



View of Front



View of Rear



View of Bottom



Inside view of EUT

